REMARKS

Claims 1, 2, 4, 6, 7, 9-12, 14, 17, 23, 25, 29, 31, 33, 34 and 36 are pending in this application. By this Amendment, independent claims 1 and 12 are amended to even further distinguish over the applied references, and claims 5, 13 and 37 are canceled without prejudice to, or disclaimer of, the subject matter recited therein. Support for the amendments to claims 1 and 12 can be found in canceled claims 5 and 13, respectively, and, for example, on page 5, lines 16-25 of the specification. No new matter is added. Reconsideration of this application in view of the above amendments and the following remarks is respectfully requested.

The Office Action rejects claims 1, 2, 4, 6, 7, 12, 14, 23 and 25 under 35 U.S.C. §103(a) over Hsieh et al. (Hsieh), U.S. Patent No. 6,225,648, in view of Toshihiro et al. (Toshihiro), JP-1992-355541; and further in view of Lakhani, J. Appl. Phys., volume 56, page 1888; 15 September 1984. The rejection is respectfully traversed.

The combination of Hsieh, Toshihiro and Lakhani does not disclose, and would not have rendered obvious, a light emitting device having a light-emitting layer section that is configured using $(Al_xGa_{1-x})_yIn_{1-y}P$ (where, $0 \leq x \leq 1$, $0.45 \leq y \leq 0.55$) to ensure lattice matching between the GaAs layer and the light-emitting layer section, as recited in independent claims 1 and 12.

The Office Action does not reject the subject matter of canceled claims 5 and 13, now incorporated into independent claims 1 and 12, respectively, under the combination of Hsieh, Toshihiro and Lakhani. Therefore, independent claims 1 and 12, and dependent claims 2, 4, 6, 7, 14, 23 and 25 are patentable over the combination of Hsieh, Toshihiro and Lakhani for at least this reason. Thus, it is respectfully requested that the rejection be withdrawn.

Further, none of the applied references discloses the features of amended claims 1 and 12.

The Office Action acknowledges that the combination of Hsieh, Toshihiro and Lakhani does not disclose a light emitting device having a light-emitting layer section that is configured using $(Al_xGa_{1-x})_yIn_{1-y}P$ (where, $0 \leq x \leq 1$, $0.45 \leq y \leq 0.55$), but applies Bass (cited below) as allegedly overcoming the deficiencies. Specifically, the Office Action asserts that $(Al_xGa_{1-x})_yIn_{1-y}P$ is a known, suitable material for configuring a light-emitting layer section and that it would have been an obvious design choice to optimize the values of x and y. However, Bass merely discloses broadly that light-emitting devices can be made from AlInGaP (see Page 12.19). That is, Bass describes a particular genus not a species. In contrast, independent claims 1 and 12 recite a specific species using $(Al_xGa_{1-x})_yIn_{1-y}P$ where, $0 \leq x \leq 1$, $0.45 \leq y \leq 0.55$, and Bass does not disclose the particular ranges for x and y. Therefore, the combination of Hsieh, Toshihiro, Lakhani and Bass also does not disclose, and would not have rendered obvious, the features of independent claims 1 and 12.

Furthermore, if the teachings of Bass were combined with those of Lakhani, which discloses that the greater the amount of In diffused into the GaAs layer, the better the contact resistance, one would diffuse too much In into the GaAs layer and result in an unacceptable decrease in light emitting strength and would not result in the claimed ranges for x and y. As such, the combination of Bass and Lakhani would not result in the features of Applicants' independent claims 1 and 12.

Contrary to the Examiner's assertion in the Advisory Action, Applicants' arguments in the February 5, 2009 Request for Reconsideration After Final Rejection (RRAFR) do not argue against the references individually. Specifically, even if one of ordinary skill in the art had combined the teachings of Hsieh, Toshihiro and Lakhani, the result would be an apparatus that does not have the features recited in independent claims 1 and 12.

As discussed in the RRAFR, the Office Action acknowledges that Hsieh does not disclose an InGaAs layer formed by diffusing In to a GaAs layer from an ITO layer, but cites Toshihiro as allegedly overcoming the deficiencies of Hsieh.

Toshihiro discloses diffusing In to a thin GaAs layer by heat treatment (see Fig. 4 and paragraphs [0005] and [0013] of the machine generated translation). However, the heat treatment time of 5 minutes at 800 degrees C taught by Toshihiro is too long, and would not result in the inclined structure composed of In having a C_B/C_A of 0.8 or below. Thus, even though the ohmic contact in Toshihiro is improved, lattice matching of the InGaAs layer and the light emitting layer will deteriorate, and unconformity occurs so as to decrease the light emitting strength.

The Office Action applies Lakhani for the teaching that an ohmic contact layer to GaAs, formed by annealing an In-containing layer, results in an improved contact resistance and asserts that indium concentration and its distribution is a result-effective variable. However, Lakhani focuses on improving contact resistance, and improving contact resistance results in a decrease in light emitting strength. Therefore, following the teachings of Lakhani, the greater the amount of In diffused into the GaAs layer, the better the contact resistance. As such, based on the teachings of Lakhani, one would diffuse too much In into the GaAs layer and result in an unacceptable decrease in light emitting strength. Therefore, Lakhani does not disclose preventing a decrease of light emitting strength caused by lattice mis-matching of the contact layer and the light emitting layer section, by setting the In concentration of the contact layer at the boundary position with the ITO transparent electrode layer to 0.6 or less on the basis of atomic ratio of In to the total concentration of In and Ga.

Therefore, if the teachings of Toshihiro and Lakhani were combined with those of Hsieh, the result would be a GaAs layer having In diffused at too high of a temperature (i.e., not having the correct C_B/C_A ratio of In) given the teachings of Toshihiro and having too

much In diffused into the GaAs layer given the teachings of Lakhani. Therefore, contrary to the Office Action's assertion, the combined teachings of Hsieh, Toshihiro and Lakahani would not result in Applicants' claimed features of independent claims 1 and 12. Thus, it is respectfully requested that the rejection of claims 1 and 12 be withdrawn for this additional reason.

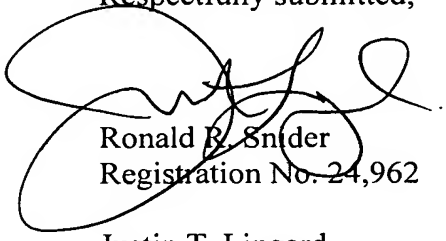
The Office Action rejects claims 9-11, 17, 29, 31, 33, 34 and 36 under 35 U.S.C. §103(a) over Hsieh in view of Toshihiro and Lakhani, and further in view of Saeki, U.S. Patent No. 6,483,127; and rejects claims 5, 13 and 37 under 35 U.S.C. §103(a) over Hsieh in view of Toshihiro and Lakhani, and further in view of Bass et al. (Bass), "Handbook of Optics - Volume 1, Fundamentals, Techniques, and Design", pages 12.1-12.39, 1995. The rejection of canceled claims 5 and 13 is moot. The rejections of the remaining claims are respectfully traversed.

Because the remaining claims incorporate the features of independent claims 1 and 12, respectively, and because Saeki and Bass fail to overcome the deficiencies of the other applied references, these claims also are patentable over the applied references for at least these reasons, as well as for the additional features that these claims recite. Thus, it is respectfully requested that the rejections be withdrawn.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachments:
Request for Continued Examination
Petition for Extension of Time

Date: March 6, 2009

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